YERSHOVA, YE. S.

35331. Vliyanie Dispersnosti Glinozema Na Spekanie Korundovogo Cherepka. Trudy
Mosk. Khim.-Tekhnol. in-Ta Im. Mendeleeva,Vyp. 16 1949, S. 59-72.-Bibliogr;
7Nazv.

SO: Letopis'Zhurnal'nykh Statey, Vol. 34, Moskva, 1949

ABRAMOVA, N.A., nauchn. sotr.; VOYEVODSKIY, A.S., nauchn. sotr.;
GINZBURG, O.F., doktor khim. nauk; YERSHOVA, Ye.TS., kand.
khim. nauk; KOLYCHEV, V.B., nauchn. sotr.; MAR'YANOVSKAYA,
K.Yu., nauchn. sotr.; MAZEL', R.L., nauchn. sotr.;
MEL'NIKOVA, N.S., nauchn. sotr.; PLATUNOVA, N.B., nauchn.
sotr.; REMOZOV, A.L., kand. khim. nauk; UTOCHKIN, V.V.,
nauchn. sotr.; KHAVIN, Z.Ya., kand. khim. nauk; EFROS, L.S.,
doktor khim. nauk; NIKOL'SKIY, B.P., glav. red.; RABINOVICH,
V.A., kand. khim. nauk, zam. glav. red.; GRIGOROV, O.N.,
doktor khim. nauk, red.; POZIN, M.Ye., doktor tekhn. nauk,
red.; PORAY-KOSHITS, B.A., doktor khim. nauk, red.;
RACHINSKIY, F.Yu., kand.khim. nauk, red.; ROMANKOV, P.G.,
doktor tekhn. nauk, red.; FRIDRIKHSBERG, D.A., kand. khim.
nauk, red.; ZONIS, S.A., red.; LEVIN, S.S., tekhn. red.;
ERLIKH, Ye.Ya., tekhn. red.

[Handbook of chemistry] Spravochnik khimika. 2. izd., perer.
i dop. Leningrad, Goskhimizdat. Vol.2. [Basic properties of
inorganic and organic compounds] Osnovnye svoistva neorgani-
cheskikh i organicheskikh soedinenii. 1963. 1167 p.
(MIRA 17:3)

1. Chlen-korrespondent AN SSSR (for Nikol'skiy).

GVERDTSITELI, I. G.; YERSHOVA, Z. B.; GUBANOV, Yu. D.

"Thermoelectrical generator with isotopic heat source."

report submitted for 3rd Intl Conf, Peaceful Uses of Atomic Energy, Geneva,
31 Aug-9 Sep 64.

YERSHOVA, Z.P.; OL'SHANSKIY, Ya.I.

Equilibrium of immiscible liquids in systems of the type
$MeF_2-MeO-SiO_2$ [with summary in English].   Geokhimiia
no.3:214-221   '57.   (MLRA 10:7)

1. Institut geologii rudnykh mestorozhdeniy, petrografii, minera-
logii i geokhimii AN SSSR, Moskva.
                    (Systems (Chemistry))

YERSHOVA, Z.P.

Equilibrium of immiscible liquids in systems of the $MeF_2 - Al_2O_3 - SiO_2$ type. Geokhimiia no.4:296-303 '57. (MIRA 12:3)

1. Institute of Geology of Ore Deposits, Petrography, Mineralogy and Geochemistry, Academy of Sciences, U.S.S.R., Moscow.
(Systems (Chemistry)) (Chemical equilibrium)

YERSHOVA, Z. P., Cand Geol-Min Sci — (diss) "Study of the ± equilibria of immiscible ~~zim~~ liquids in ~~fluorsilicaeous~~ *fluosilicate,* fusions." Mos, 1958. 17 pp with drawings (Acad Sci USSR. Inst of Geology of Ore Deposits, Petrography, Mineralogy, and Geochemistry), 125 ~~rn~~ copies (KL, 18-58, 96)

YERSHOVA, Z.P.; OL'SHANSKIY, Ya.I. [deceased]

Equilibrium of two liquid phases in fluoride-silicate systems
containing alkali metals [with summary in English]. Geokhimiia
no.2:144-154 '58.   (MIRA 12:4)

1. Institute of the Geology of Ore Deposits, Petrography, Mineral-
ogy and Geochemistry, Academy of Sciences, U.S.S.R., Moscow.
              (Phase rule and equilibrium)

Yershova Z.P.

SHILOV, V.N.; BELIKOVA, N.N.; YERSHOVA, Z.P.

Fusion method for approximating the chemical composition of Cenozo igneous rocks in South Sakhalin. Dokl. AN SSSR 119 no.2:326-329 Mr '58.
(MIRA 11:5)

1. Sakhalinskiy kompleksnyy nauchno-issledovatel'skiy institut AN SSSR. Predstavleno akademikom D.S. Korzhinskim.
(Sakhalin--Rocks, Igneous)

TSVETKOV, A.I.; YERSHOVA, Z.P.; MATVEYEVA, N.A.

Synthesis of chromium silicate similar to olivine. Izv.
An SSSR.Ser. geol. 29 no. 2:3-15 F '64.   (MIRA 17:5)

1. Institut geologii rudnykh mestorozhdeniy, petrografii,
mineralogii i geokhimii AN SSSR, Moskva.

YERSHOVA, Z.V.

In memory of Frédéric Joliot-Curie. Med.rad. 3 no.6:62-65
N-D '58.   (MIRA 12:1)
     (OBITUARIES.
          Joliot-Curie, Frederic (Rus))

21(4)

AUTHORS: Yershova, Z. V.,   Vladimirova, M. V.

SOV/89-5-5-6/27

TITLE: The Effect Produced by α-Radiation Upon Aqueous Solutions
             of Acids (Deystviye α-izlucheniya na vodnyye rastvory kislot)

PERIODICAL: Atomnaya energiya, 1958, Vol 5, Nr 5, pp 546-549 (USSR)

ABSTRACT: The effect produced by the α-radiation of polonium
             (0.09 - 1.5 mC/ml) upon a 0.8 n aqueous sulfuric acid was
             investigated.
             The polonium was precipitated from a nitric acid solution
             on copper powder, after which it was distilled in a vacuum.
             The distillate was dissolved in a 6 n nitric acid. This
             solution was used as initial product for the experiments to
             be carried out. A certain part of this solution was dried
             by evaporation in a quartz bowl, the residues were dis-
             solved in freshly prepared 0.8 n sulfuric acid and stored
             in a glass vessel (Pyrex glass). The radiation-chemical
             yield of hydrogen peroxide is considered as criterion for
             the purity of the polonium sulfate solution.
             The latter is determined by the number of hydrogen peroxide
Card 1/3   molecules which are liberated in the unit volume by 100 eV

SOV/89-5-5-6/27

The Effect Produced by α-Radiation Upon Aqueous Solutions of Acids

absorbed energy. The average quadratic error committed when determining the yield amounted to $\pm$ 10 %.
The hydrogen peroxide was determined by means of the apparatus ФЭК-14 according to the photocolorimetric method. The average quadratic error in this case amounted to $\pm$ 6 - 9 %. The energy E in eV/ml absorbed during the time T (in hours) was determined from the relation $E = 7.06.10^{17}.A.T$, where A denotes the activity of the solution in mC/ml, which was measured by means of a scintillation counter.
It was found by experiment that within the range of polonium concentrations of from 0,09 to 1,5 mC/ml the radiation-chemical yield of hydrogen peroxide is at first equally high, viz. 1.20 ± 0.12 molecules per 100 eV absorbed energy. The hydrogen peroxide concentration tends towards a limiting value. The limiting equilibrium concentration of hydrogen peroxide in 0,8 n sulfuric acid amounts to $\sim 5 - 8.10^{19}$ molecules/ml. There are 3 figures, 1 table, and 2 references, 2 of which are Soviet.

Card 2/3

YERSHOVA, Z.V.

FILMS, FIIM EXPLOITATION   SOV/2113

International Conference on the Peaceful Uses of Atomic Energy. 2nd, Geneva, 1958

Mainly scientific research; polucheniye i primeneniye izotopov. (Reports of Soviet Scientists: Production and Application of Isotopes) Moscow, Atomizdat, 1959. 368 p. (Series: Ikh Trudy, vol. 6) 8,000 copies printed.

Eds. (title page): O.V. Kurdyumov, Academician, and I.I. Novikov, Corresponding Member, USSR Academy of Sciences; Ed. (inside book): Z.B. Andreyenko; Tech. Ed.: Z.B. Andreyenko.

PURPOSE: This book is intended for scientists, engineers, physicians, and biologists engaged in the production and application of atomic energy to peaceful uses; for professors and graduate and undergraduate students of higher technical schools where nuclear science is taught; and for the general public interested in atomic science and technology.

COVERAGE: This is volume 6 of a 6-volume set of reports delivered by Soviet scientists at the Second International Conference on the Peaceful Uses of Atomic Energy held in Geneva from September 1 to 13, 1958. Volume 6 contains 32 reports on: 1) modern methods for the production of stable radioactive isotopes and their labeled compounds, 2) research results obtained with the aid of isotopes in the field of chemistry, metallurgy, machine building, and agriculture, and 3) dosimetry of ionizing radiation. Volume 6 was edited by O.V. Lepinskiy, Candidate of Medical Sciences, V.I. Presnov, Candidate of Chemical Sciences, and V.V. Bochin, Candidate of Medical Sciences. See Sov/2123 for titles of volumes of the set. References appear at the end of the articles.

16. Bibergal', A.V., V.L. Karpov, and V.I. Sinitsyn. Cobalt Sources of High Intensity for Radiative Action (Report No. 2134)   230

17. Gusev, N.G., Ye. Ye. Kovalev, and V.I. Popov. Gamma Radiation Units and Outside Extended Sources (Report No. 2068)   231

18. Aglintsev, K.K., M.A. Bak, V.V. Bochkarev, Ye.G. Grachev, I.V. Yurgins, and I.I. Petrukh. System of Radiometric Measurement of Radioactive Isotopes (Report No. 2067)   237

19. Aglintsev, K.K., V.P. Kasatkin, V.V. Nitrofanov, and V.V. Smirnov. Application of Nuclear Spectroscopy Methods to Beta and Gamma-ray Dosimetry (Report No. 2306)   247

20. Bochin, P.S., V.I. Gol'danskiy, and V.I. Baranov. Instruments for Measuring Small Streams of High-Energy Neutrons (Report No. 2135) 271

21. Ostashev, A.I., V.I. Polikarpov, and V.A. Kalashev. Measuring and Analyzing Air Contamination by Low Concentrations of Aerosol Alpha Emitters (Report No. 2136)   280

22. Galanina, G.V., V.I. Veksarskiy, and O.A. Reutlinova. Photosynthesis Studied by Quantitative Radiometric Methods (Report No. 2377)   42

25. Balin, Yu.V. and A.V. Krylov. Studying the Transfer, Distribution, and Transformation of Certain Physiologically Active Compounds in Plants (Report No. 2133)   55

22. Gusev, I.Yu, Ye.Ye. Gratkina, and A.Yu. Petrov-Spiridonov. Rhythm of Absorption and Secretion in Roots (Report No. 2133)   46

25. Zhdanov, A.I. and V.A. Shestakov. Effect of the Rhizosphere Microorganisms on the Absorption and Secretion of Phosphorus and Sulfur by the Seedling Roots of Wooly Plants (Report No. 2312)   300

26. Klechkovskiy, V.M. and M.D. Profrosov. Absorption of Phosphorus Tracers by Cultivated Plants in Relation to Their Resistance to Cold (Report No. 2133)   115

27. Andreyev, B.V., A.V. Voyvodin, V.A. Molchanova, and A.V. Zvonkevich. Some Results of Using Radioactive Isotopes for Plant Protection (Report No. 2309)   5

Alloys of Zirconium and Titanium Fuses by the Radioactive Isotope Method (Report No. 1510)   129

VLADIMIROVA, M.V.; YERSHOVA, Z.V.

Action of alpha radiation from polonium on concentrated sulfuric
acid solutions. Radiokhimiia 2 no.4:495-499 '60.   (MIRA 13:9)
        (Polonium)   (Sulfuric acid)   (Alpha rays)

S/844/62/000/000/026/129
D244/D307

AUTHORS: Vladimirova, M. V. and Yershova, Z. V.

TITLE: Radiolysis of aqueous sulphuric acid solutions under the
           action of α radiation

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khi-
           mii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962,
           162-166

TEXT: The object of the present work was to investigate the evolu-
tion of gases resulting from α irradiation of aqueous H_2SO_4 solu-
tions of various concentrations and the influence of certain accep-
tors (glucose, methylene blue, H_2) on the initial yields of H_2, O_2
and H_2O_2. Po^{210} dissolved in the solutions was used as the source
of α rays. The dosage varied from 2×10^{14} to 2×10^{16} ev/ml.sec.
It was found that the yield of H_2 increases somewhat with the in-
creasing H_2SO_4 concentration (0.4 to 4.0 M) and the yields of O_2

Card 1/2

Radiolysis of aqueous ...

S/844/62/000/000/026/129
D244/D307

become lower. The initial yield of H_2 in 0.4 M H_2SO_4 remains constant for a wide range of absorbed energy (5 to 400 x 10^{18} ev/ml), and concentration of Po^{210} (from 1 to 100 mcuries/ml). Glucose (0.005 M) and methylene blue (7 x 10^{-5} M) begin to interact with OH in the 'track' region as suggested by the increased initial yields of H_2O_2 and H_2. In the presence of H_2 (0.1 M) the yield of H_2O_2 increases. The reactive capacity of the various acceptors with OH radicals decreases in the order methylene blue, Tl^+, glucose, H_2. There are 1 figure and 4 tables.

Card 2/2

VLADIMIROVA, M.V.; YERSHOVA, Z.V.

Effect of α-radiation on sulfuric acid solutions of methylene blue. Mechanism of α-radiolysis. Radiokhimiia 5 no.4:479-485 '63.   (MIRA 16:10)

(Methylene blue, Effect of radiation on)

YERSHOVA-YAKIMAK, M. V.

"Changes in the blood system in ulcerous disease." First Leningard Medical
Inst imeni Academician I. P. Pavlov. Leningrad, 1956. (DISSERTATION For
the Degree of Candidate in MEDICAL SCIENCE.)

Knizhnaya letopis'
No 33, 1956, Moscow

plate by a force at the end is considered.   V. L. Rozenblyum

POKROVSKIY, A.A.; YERTANOV, I.D. (Moscow)

Susceptibility of dietary proteins to proteolytic enzymes in
vitro. Vop.pit. 24 no.3:38-44 My-Je '65.

(MIRA 18:12)

1. Laboratoriya klinicheskoy enzimologii (zav. - prof. A.A.
Pokrovskiy) Instituta pitaniya AMN SSSR, Moskva. Submitted
November 24, 1964.

YERTANOV, I.D.

Physiological and hygenic evaluation of a food ration developed
by the Central Scientific Research Institute of the Canned Food
and Vegetable Industry. Vop. pit. 21 no.5:71-75 S-O '62.
(MIRA 17:5)

1. Iz laboratorii izucheniya spetsial'nogo pitaniya (zav. P.P.
Ivanov) Instituta pitaniya AMN SSSR, Moskva.

KOMAROV, O.S., inzh.; YERSHOVICH, A.N., inzh.

Effect of aluminum on the structure and properties of cast iron.
Lit. proizv. no.7:26-27 Jl '65.   (MIRA 18:8)

AUTHORS: Yeru, I.I., Volkov, Yu.M. and Lange, A.A.

TITLE: Purification of Raw Benzole Fraction by Catalytic
             Hydrogenation Under Pressure of Coke-oven Gas (Ochistka
             fraktsiy syrogo benzola metodom kataliticheskogo
             gidrirovaniya pod davleniyem koksovogo gaza)

ABSTRACT: An investigation of the purification of raw benzole
             fraction by hydrogenation over tungsten-nickel sulphide
             and molybdenum cobalt oxides on alumina catalysts is
             described. Preliminary experiments were carried out on
             a high-pressure dropping apparatus (dropwise feed of
             raw benzole into the reactor (Figure 1). At 340 $^{\circ}$C
             and 40 atm, the sulphide catalyst was found to be too
             active as hydrogenation of benzene hydrocarbons was
             taking place. Oxide catalyst was found to be more
             suitable as a product containing only 0.005% of thiophene
             could be obtained at 390 $^{\circ}$C and contact time of 12 sec
             at 40 atm and 16 seconds at 60 atm. The sulphur balance
             of the process is shown in Table 1. Further experiments
             were carried out in a continuous small-scale plant
             (Figure 3). It was found in the initial experiments
Card1/2   that the reaction temperature could be reduced to 350 $^{\circ}$C.

SOV/68-58-2-10/20

Purification of Raw Benzole Fraction by Catalytic Hydrogenation Under
Pressure of Coke-oven Gas

Further tests were carried out at 350 $^{\circ}$C, 40 atm, and
volume velocity of 0.5 vol/vol/h. The experimental
results obtained are given in Table 6. It was found
that the hydrogenation process under these conditions
was satisfactory but in order to obtain pure benzole
a higher efficiency rectification column is necessary.
There are 3 figures, 2 tables and 3 references, 2 of
which are German and 1 Soviet.

ASSOCIATION: UKhIN . .

Card 2/2

YERU, I.I., LANGE, A.A., TIMOSHENKO, V.A.

Catalytic isomerization of meta-xylene in the presence of coke-oven gas under pressure. Koks i khim. no.3:51-53 '60.   (MIRA 13:6)

1. Ukrainskiy uglekhimicheskiy institut.
            (Xylene) (Coke-oven gas)

YERU, I.I.; LANGE, A.A.

Catalytic hydrofining of the fraction of crude benzene under the
pressure of coke-oven gas. Koks i khim. no.8:37-41 '60.
(MIRA 13:8)

1. Khar'kovskiy nauchno-issledovatel'skiy uglekhimicheskiy institut.
(Benzene)   (Coke-Oven gas)

YERU, I.I.; LANGE, A.A.; TIMOSHENKO, V.A.; KIR'YAKOVA, Ye.T.

Hydrogenation of naphthalene and naphthalene-containing oils.
Koks i khim. no. 5:44-46 '61.   (MIRA 14:4)

1. Ukrainskiy uglekhimicheskiy institut.
                (Naphthalene) (Hydrogenation)

YERU, I.I.; PODOROZHANSKIY, M.M.

Results of the destructive hydrogenation of condensation products of
toluene with dichloroethane. Koks i khim. no.8:47-49 '61.
(MIRA 15:1)

1. Ukrainskiy uglekhimicheskiy institut.
(Condensation products) (Hydrogenation) (Toluene) (Ethane)

YERU, I.I.; LANGE, A.A.; MARIICH, L.I.; SOKOLOV, V.Z.; YEMEL'YANOVA, L.P.

Purification of the fractions of crude benzene by catalytic hydrogenation in coke-chemical plants of the Soviet East. Koks i khim. no.11:41-43 '61.   (MIRA 15:1)

1. Ukrainskiy uglekhimicheskiy institut (for Yeru, Lange, Mariich).
2. Vostochnyy uglekhimicheskiy institut (for Sokolov, Yemel'yanova).
                    (Soviet Far East--Benzene)

S/068/62/000/003/002/003
E071/E435

AUTHORS: Nosalevich, I.M., Yeru, I.I., Yastrzhembskaya, O.V.
Andreyeva, V.S.

TITLE: The production of lightly coloured and light resistant
indine-coumarone resins by the method of catalytic
hydrogenation

PERIODICAL: Koks i khimiya, no.3, 1962, 44-46

TEXT: The work was carried out in order to determine the
possibility of production of light coloured, stable and light-
resistant indine-coumarone resins, similar to good quality resins
produced in other countries.   The following types of catalyst
were tested: an industrial tungsten nickel sulphide on alumina
(tablets), molybdenum trisulphide (powder) and nickel-chromium
oxide (tablets).   The hydrogenation was done in two types of
autoclaves: a) with a stirrer, 350 rpm; b) by rotating about the
horizontal axis at 75 rpm.   As a starting material an industrial
product of catalysis containing 44 to 48% resin and about 0.25%
sulphur was used.   Catalysts were added in the form of a fine
powder in an amount of 10 wt %.   The hydrogenation product was
Card 1/3

The production of lightly coloured ...   S/068/62/000/003/002/003
E071/E435

filtered and steam distilled. The colour of industrial resins
is usually determined by the iodine scale but the colour of the
hydrogenated product was so much improved that the iodine scale
could not be used and instead the chromate scale was applied.
In addition, the iodine numbers of the starting (54 to 56) and the
finished product (25 to 30) were determined. The resistance to
light was determined by irradiation for 6 hours with ultraviolet
light.   It was found that with the sulphide catalyst at 300 to
250°C, the initial hydrogen pressure could be reduced to 30 to
40 atm without noticeable effect on the colour of the finished
product. The colour of the starting product 35 units of the
iodine scale; finished product - 0.5 units of the chromate scale.
A decrease of the duration of heating from 60 to 30 min also had
no influence on the quality of the product further decrease to
10 minutes brings about a noticeable deterioration. Replacement
of hydrogen by coke-oven gas brings about some increase in the
coloration of the resins. Experiments carried out in a rotating
autoclave gave somewhat better results for both hydrogen and coke-
oven gas; this is explained by the effect of hydrogenation in a
Card 2/3

The production of lightly coloured ...   S/068/62/000/003/002/003
E071/E435

thin layer.   For experiments with the oxide catalyst a finished
industrial resin was dissolved in sulphur free benzole (a 35%
solution) which reduced the sulphur content of the hydrogenated
material to 0.1%.   The colour of the hydrogenated product was
reduced to 0.3 units.   Specimens of imported resins had a colour
of 0.6 units and were less resistant to the action of ultraviolet
light.   In addition to better colour and higher resistance to
light, the hydrogenated resins had a lower ash content 0.07%
(against 0.48) in the initial state), and a higher compatability
with vegetable oils.   No data on the resistance to light are
quoted.   The production of hydrogenated resins is planned at the
Kadiyevskiy koksokhimicheskiy zavod (Kadiyevka Coal-tar Chemical
Works).   There are 2 tables.

ASSOCIATION: UKhIN

Card 3/3

YERU, I.I.; LANGE, A.A.; ZEYDLITS, Ye.M.; STREL'NIKOVA, V.P.

Catalytic hydrogenation of quinoline for the production of the "Kyusol"
repellent. Koks i khim. no.10:46-49 '62.   (MIRA 16:9)

1. Ukrainskiy uglekhimicheskiy institut.
   (Kyusol) (Coke industry—By-products)

YERU, I.I.; LANGE, A.A.; MARIICH, L.I.

Catalytic hydrofining of the BTX fractions of some coke plants.
Koks i khim. no.7:48-50   '63.   (MIRA 16:8)

1. Ukrainskiy uglekhimicheskiy institut.
        (Coke industry--By-products)   (Benzene)

YERU, I.I.; MARICH, L.I.; LANGE, A.A.

Preparation of high purity cyclohexane from a narrow benzne fraction
of crude benzene. Khim. prom. no.8:576-579 Ag '63.

(MIRA 16:12)

1. Ukrainskiy uglekhimicheskiy institut.

YERU, I.I.; ISHCHVATSKIY, S.A.; CHERNETS, A.N.

Spin-lattice relaxation of Fe^{3+} ions in natural andalusite at low
temperatures. Fiz. tver. tela 7 no.2:363-366 F '65.

(MIRA 18:3)

1. Institut radiofiziki i elektroniki AN UkrSSR, Khar'kov.

Chernov, A. B

Spin lattice relaxation in the ion   mixture

, v. 7, no. 2, 1965, 363-366

ERU, R. I.

USSR/Medicine-Ultraviolet Rays   Jan/Feb 50
    Radiation Effects

"Exposure of a Scarlet Fever Ward to Ultraviolet Radiation," Prof M. L. Koshkin,
Docent, F. M. Moselevskiy, R. I. Eru, Chair of Gen Hygiene, Chair of Children's
Infections, Khar'kov Med Inst

"Pediatriya" No 1, pp 30-38

Tests effect of subject radiation on bacterial contamination of the air and various
objects in a scarlet fever ward and effect of radiation on patients. Finds radi-
ation reduces number of bacteria, especially streptococci. Observes no harmful
results in patients of subject ward. Definite decrease in complications is app-
arent. Includes five tables. Chief Chair of Gen Hygiene: Prof M. L. Koshkin.
Chief, Chair of Children's Infections: Docent A. I. Pevzner.

PA 163T32

YERUGIN, A.

Studying the function $I(\vartheta) = \int_{\vartheta}^{\vartheta} \rho(\vartheta) \, L(\vartheta) \, d\vartheta.$ Biul.SNO LGU
no.1:20-34   '58.   (MIRA 13:6)
        (Integrals)

L 02264-67   EWT(1)/EWT(m)/EWP(e)/T/EWP(t)/ETI.   IJP(c)   GG/WH/JD

ACC NR: AP6025264   SOURCE CODE: UR/0057/66/036/007/1315/1316

AUTHOR: Yeru, I.I.

ORG: none

TITLE: Dielectric properties of some crystals in the millimeter wavelength range

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 7, 1315-1316

TOPIC TAGS: Dielectric constant, dielectric loss, extreme high frequency, quartz, ruby, andalusite, single crystal

ABSTRACT: The author has measured the room temperature dielectric constants and loss tangents at 10^{11} Hz of quartz, andalusite, and synthetic ruby single crystals, using the standing wave ratio and standing wave pattern shift techniques of S.Roberts and A.Hippel (J. Appl. Phys. 17, 610, 1946). The values found for the dielectric constant (loss tangent) of andalusite, ruby and quartz are 8 (0.02, 9 (0.01), and 5 (0.01), respectively. The loss tangents given above for andalusite and ruby were measured with the electric field in the waveguide parallel to the optic axis of the crystal (as determined from electron paramagnetic resonance measurements); these loss tangents were approximately twice as large when the electric field was perpendicular to the optic axis. The relative dielectric losses of the crystals were also measured at temperatures from 300 to 4.2° K by observing the effect of the presence of the specimen on the reflection coefficient of a resonator. The dielectric loss at 10^{11} Hz of all three

Card 1/2

L 02264-67
ACC NR: AP6025264

crystals decreased by more than two powers of ten as the temperature was decreased
from 300 to 4.2° K. Orig. art. has: 1 figure and 1 table.

SUB CODE: 20   SUBM DATE: 09Aug65   ORIG.REF: 002   OTH REF: 006

Card 2/2 pb

YERUGIN, A.N.

Structure of an explicit solution for an equation of the
integrals of curves of an autonomous system in the case
of a focus. Dokl. AN BSSR 2 no.11:441-449 D '58.
(MIRA 12:8)

1.Predstavleno akademikom AN BSSR V.I. Krylovym.
        (Differential equations)

YERUGIN, A.N.

Structure of an explicit solution to the equation of integral
curves for one class of systems of two differential equations
with nonholomorphic right parts. Vestsi AN BSSR.Ser.fiz.-
tekh.nav. no.4:23-32 '58.   (MIRA 12:4)
                    (Differential equations)

06L01
SOV/170-59-2-19/23

16(1)

AUTHOR: Yerugin, A.N.

TITLE: The Structure of the Explicit Solution of the Equation of Integral Curves
            in the System of Two Differential Equations for the Case of Two Equal Roots
            of the Characteristic Equation

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1959, Nr 2, pp 121-128 (USSR)

ABSTRACT: There is a system of two differential equations:

$$\frac{dx}{dt} = x - \mathcal{Y}(x,y); \qquad \frac{dy}{dt} = x + y + \psi(x,y)$$

where $\mathcal{Y}(x,y)$ and $\psi(x,y)$ are series which converge at $x^2 + y^2 \leqslant r_0^2$,
Dividing the second equations by the first one obtains the equation de-
noted by (4) in the text of the paper. The solution of Equation 4 in the
neighborhood of the singular point (0,0) qualitatively is a degenerated
node; all integral curves adhere to the origin and are tangents to the
y-axis. The problem set in this paper consists in the clarification of
the analytical structure of the solution of Equation 4 in the infinitely
small vicinity of the origin. The author states and then proves that this

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06401

SOV/170-59-2-19/23

The Structure of the Explicit Solution of the Equation of Integral Curves in the System of Two Differential Equations for the Case of Two Equal Roots of the Characteristic Equation

solution can be presented by an expression of y being a function of x, Formula 6, in which the constant coefficients are given by Formulae 31 and the terms $\eta_K(x)$ have the properties defined by Formulae 7 in the text of the paper.

ASSOCIATION: Otdeleniye Matematicheskogo instituta AN SSSR (Branch of the Mathematical Institute of the AS USSR), Leningrad.

Card 2/2

S/044/62/000/006/010/127
B112/B104

AUTHOR: Yerugin, A. N.

TITLE: Recurrence formulas for asymptotic expansions of integral
            curves near the focus

PERIODICAL: Referativnyy zhurnal. Matematika, no. 6, 1962, 49, abstract
            6B214 (Izv. AN BSSR. Ser. fiz.-tekhn. n., no. 2, 1960, 16-28)

TEXT: This paper concludes a series of papers of the author (RZhMat, 1960,
2935, 2973, 5242, 13791), which deals with the expansion of a solution
$r = f(\varphi, c)$ (where r is the radius vector, φ the polar angle, c an arbitrary
constant) of a set of differential equations $dx/dt = X(x, y)$, $dy/dt = Y(x,y)$
in a series on the assumption that the focus be the coordinate origin and
that the series representing the solution converges for all $|\varphi|>M$ (where M
is an arbitrary number). In the present paper, new recurrence formulas
are set up for the expansion coefficients. [Abstracter's note: Complete
translation.]

Card 1/1

YERUGIN, A.N.

Features of solutions of a system of two differential equations in
the case of a focus and in certain other cases. Vestsi AN BSSR.
Ser.fiz.-tekh.nav. no.3:17-20 '60.   (MIRA 13:9)
      (Differential equations)   (Asymptotic expansions)

YERUGIN, A.N.

Asymptotic expansion of a solution for a class of system of two
differential equations with holomorphic right-hand side.   Vestsi
AN BSSR. Ser.fiz.-tekh.nav.   no.1:27-42 '60.   (MIRA 13:6)
        (Differential equations)   (Asymptotic expansions)

YEHUGIN, A.N.

Structure of a set of values of an arbitrary constant in the case of a focus. Dokl.AN BSSR 4 no.7:273-275 Jl '60.

(MIRA 13:8)

1. Matematicheskiy institut AN SSSR. Predstavleno akad. AN BSSR V.I. Krylovym.

(Aggregates)

YERUGIN, A. N., Cand. Phys-Math. Sci. (diss) "Assymptomatics of
Analytical Structure and Properties of Solutions of Equations of
Integral Curves of One Class of Systems of Two Differential Equa-
tions with Holomorphic Right Parts in Case of Focus." Minsk, 1961,
9 pp (Combined Scientific Council of Institutes of Mathematics,
Physics, and Metallic Physics, Acad. of Sci. UkrSSR) 200 copies
(KL Supp 12-61,250).

YERUGIN, A.N. [Eruhin, A.N.]

Approximate computation and order of smallness of an improper integral
(1.1). Vesti AN BSSR Ser. fiz.-tekh. nav. no. 1:37-41 '61.
(MIRA 14:4)

(Integrals, Definite)

/6.3500

22827
S/170/61/004/005/013/015
B111/B214

AUTHOR: Yerugin, A. N.

TITLE: Approximate solution of a nonlinear equation

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 4, no. 5, 1961, 111-114

TEXT: The equation $z' + p(x)z = q(x) + f(x,z)$ is given, where $p(x)$, $q(x)$, $f(x,z)$ are integrable functions, for $x \in X$, $z \in Z$, $g(x)$ it holds $|f(x,z)| \leq g(x)$, where $g(x)$ is an integrable function. It further holds: $z(x) = y(x) + \varphi(x)$, $y' + p(x)y = q(x)$; $\varphi' + p(x)\varphi = f(x,z(x))$. If the function $\varphi(x)$ is estimated one obtains: (3), and (4). The formulas

$$\varphi = [F(x)]^{-1} \left[\varphi_0 + \int_{x_0}^{x} f(x, z(x)) F(x) \, dx \right];$$

$$F(x) = \exp \left[\int_{x_0}^{x} p(x) \, dx \right]; \tag{3}$$

Card 1/4

$$|\varphi| \sim [F(x)]^{-1} \left[|\varphi_0| + \left| \int_{x_0}^{x} g(x) F(x) \, dx \right| \right]. \tag{4}$$

Approximate solution ...

1) $f(x, z) \lessdot 0 (x \in X, z \in Z)$;

2) $|f(x, z_1)| \backsim |f(x, z_2)| (x \in X; z_1 z_2 \in Z; z_1 \lessdot z_2)$.

When Тогда если $\varphi_0 < 0$, *then* то при $x \in X$ $z(x), y(x) \in Z$

$$|\varphi(x)| \lessdot [F(x)]^{-1}\left[|\varphi_0| + \left|\int_{x_0}^x f(x, y(x)) F(x) dx\right|\right]. \qquad (5)$$

Аналогично если выполнены условия

When : 1) $f(x, z) > 0 (x \in X, z \in Z)$; $\qquad (6)$

and when 2) $f(x, z_1) \backsim f(x, z_2) (x \in X; z_1, z_2 \in Z; z_1 > z_2)$
и если $\varphi_0 > 0$, *then* то при $x \in X; z(x), y(x) \in Z$

$$|\varphi(x)| \lessdot [F(x)]^{-1}\left[\varphi_0 + \left|\int_{x_0}^x f(x, y(x)) F(x) dx\right|\right]. \qquad (6)$$

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Approximate solution ...

allow to introduce a method of successive approximations, where the first approximation is:

$$z_1(x) = y(x) + \varphi_1(x); \quad \varphi_1(x) = \left[F(x)\right]^{-1}\left[\varphi_0 + \int_{x_0}^{x} f(x,y,(x))F(x)dx\right].$$ If the

first approximation $z_1(x)$ is substituted for $z(x)$ in (3) one obtains $z_2(x) = y(x) + \varphi_2(x)$. Generally the following equation holds:

$$|z(x) - z_n(x)| \leqslant A^n |F(x)|_i^{-1}\left[\frac{|\varphi_0|}{n!}|x - x_0|^n +\right.$$

$$\left. + \left|\int_{x_0}^{x} \cdots \int_{x_0}^{x} g(x)F(x)\underbrace{dx \ldots dx}_{n+1}\right|\right]. \qquad (15).$$

$$\left|\int_{x_0}^{x} \cdots \int_{x_0}^{x} g(x)F(x)\underbrace{dx \ldots dx}_{m}\right| + |F(x)|^{-1} \leqslant \text{const}, \qquad (16)$$

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S/170/61/004/005/013/015
B111/B214

Approximate solution ...

It is seen from (15) that for certain m and $x \in X$ (16) holds and $z_n(x)$ tends to $z(x)$ as n tends to infinity. If (15) and (16) are satisfied, $g(x)$ may be replaced by $f(x,y(x))$. There is 1 non-Soviet-bloc reference.

ASSOCIATION: Leningradskoye otdeleniye matematicheskogo instituta AN SSSR im. V. A. Steklova, g. Leningrad (Leningrad Department of the Institute of Mathematics, AS USSR imeni V. A. Steklov, Leningrad)

SUBMITTED: November 28, 1960

Card 4/4

YERUGIN, A.N.

Analytical structure of an explicit solution of an equation of integral
curves of certain systems of differential equations. Dokl.AN SSSR
5 no.5:191-193 My '61.
(MIRA 14:5)

1. Institut matematiki AN SSSR. Predstavleno akademikom AN BSSR
V.I.Krylovym.
(Differential equations)

16 3400

S/044/62/000/004/018/099
C111/C444

AUTHOR: Yerugin, A. N.

TITLE: The analytic structure of the solution of the equation
            of the integral curves of a system of two differential
            equations with non-holomorphic right hands

PERIODICAL: Referativnyy zhurnal, Matematika, no. 4, 1962, 26,
            abstract 4B131. (Dokl. ANBSSR, 1961, 5, no. 7, 284-285)

TEXT: Formal representations are given of the solution of the
equation

$$\frac{dr}{d\theta} = R_0(\theta)r + \sum_{n=1}^{\infty} R_n(\theta)r^{1+\alpha_n}$$

and it is pointed out that sometimes (e. g. if $\alpha_n = \alpha \cdot n$) the cor-
responding series surely converges. Some time ago the author (RZhMat,
1962, 1B182) considered the case $R_0(\theta) = 0$.

[Abstracter's note: Complete translation.]

Card 1/1

S/041/61/013/002/007/007
B112/B203

25179

16.3400

AUTHOR: Yerugin, A. N.

TITLE: Analytical structure of the solution of the equation for integral curves of a system of two differential equations in certain cases

PERIODICAL: Ukrainskiy matematicheskiy zhurnal, v. 13, no. 2, 1961, 224 - 226

TEXT: The author studies the integral curves of the system:

$$\dot{x} = y + X, \quad \dot{y} = Y,$$ (1)

where X and Y are certain holomorphic functions of x and y, whose leading terms are of second order at least. He defines two functions, $f(x)$ and $\varphi(x)$:

$$f(x) = Y(x, \bar{y}(x)) = ax^{\alpha} + \cdots,$$

$$\varphi(x) = \left(\frac{\partial X}{\partial x} + \frac{\partial Y}{\partial y} \right)\bigg|_{y=\bar{y}(x)} = bx^{\beta} + \cdots,$$

Card 1/3

Analytical structure of the solution...

where $\bar{y}(x) = \sum\limits_{i=2}^{\infty} A_i x^i$ satisfies the equation: $\bar{y} + X = 0$. The author

considers two cases: 1)$\alpha = 2n - 1$, $a < 0$, $\varphi(x)$ contains only terms of an order higher than $(\alpha + 1)/2$: After introducing new variables, r and ϑ, instead of x and y, the author obtains the following solution for the equation of the integral curves of (1):

$$r = C + \sum\limits_{i=2}^{\infty} u_i(\vartheta)c^i,$$

where C is an arbitrary constant, and $u_i(\vartheta)$ are certain functions with

the period $2\omega \left(\omega = \sqrt{\dfrac{r}{n}} \; \Gamma\left(\dfrac{1}{2n}\right)/\Gamma\left(\dfrac{n+1}{2n}\right)\right)$ which can be determined by an

infinite system of differential equations. 2) β odd, $\alpha = 2\beta + 1 = 2n - 1$, $b^2 + 4(\beta + 1)a < 0$: This case can be reduced to case (1) by a suitable transformation of variables. A. M. Lyapunov is mentioned.

Card 2/3

Analytical structure of the solution.. $\begin{array}{l} S/041/61/013/002/007/007 \\ B112/B203 \end{array}$

25179

There are 4 Soviet-bloc references.

SUBMITTED: December 21, 1960

Card 3/3

16.3500

39876
S/044/62/000/007/016/100
C111/C333

AUTHOR: Yerugin, A. N.

TITLE: The properties of the asymptotic expansions of the explicit
             solution of the equation of the trajectories of some
             differential equation systems

PERIODICAL: Referativnyy zhurnal, Matematika, no. 7, 1962, 36,
             abstract 7B176. ("Dokl. AN BSSR, 1961, 5, no. 10, 421-423)

TEXT: Considered are differential equations

$$\frac{\partial z}{\partial \theta} = g_0 z^{1+\alpha_0} + \sum_{n=1}^{\infty} Q_n(\theta) z^{1+\alpha_0+\alpha_n} \equiv Q(z,\theta). \qquad (1)$$

Here $Q_n(\theta)$ are functions which can be expanded into Fourier series,
where the series of the Fourier coefficients of these functions converge
absolutely; $g_0 < 0$, $\alpha_n = n\alpha$, $\alpha = $ const > 0. The series $Q(z, \theta)$ conver-
ges absolutely and uniformly for $z \leq z_0$, $z_0 = $ const > 0. One asserts
that (1) possesses solutions of the form

Card 1/2 $z = \theta_1^{-1}[1 + \gamma(\theta)]$

The properties of the asymptotic ...

where $\vartheta_1 = \sqrt[\alpha_r]{g_0(-x_0)\theta}$ and where for $\gamma(\theta)$ there is given an asymptotic expansion in terms of the powers of θ_1^{-1}. The form of this expansion depends on the relation between α and x_0. The proof of the assertion is not given.

[Abstracter's note: Complete translation.]

Card 2/2

YERUGIN, A.N.

Properties of asymptotic expansions of the explicit solution of an
equation of integral curves of some systems of differential equa-
tions. Dokl. AN BSSR 5 no.10:421-423 0 '61.   (MIRA 15:3)

1. Institut matematiki AN SSSR. Predstavleno akademikom AN BSSR
V.I.Krylovym.
                        (Differential equations)
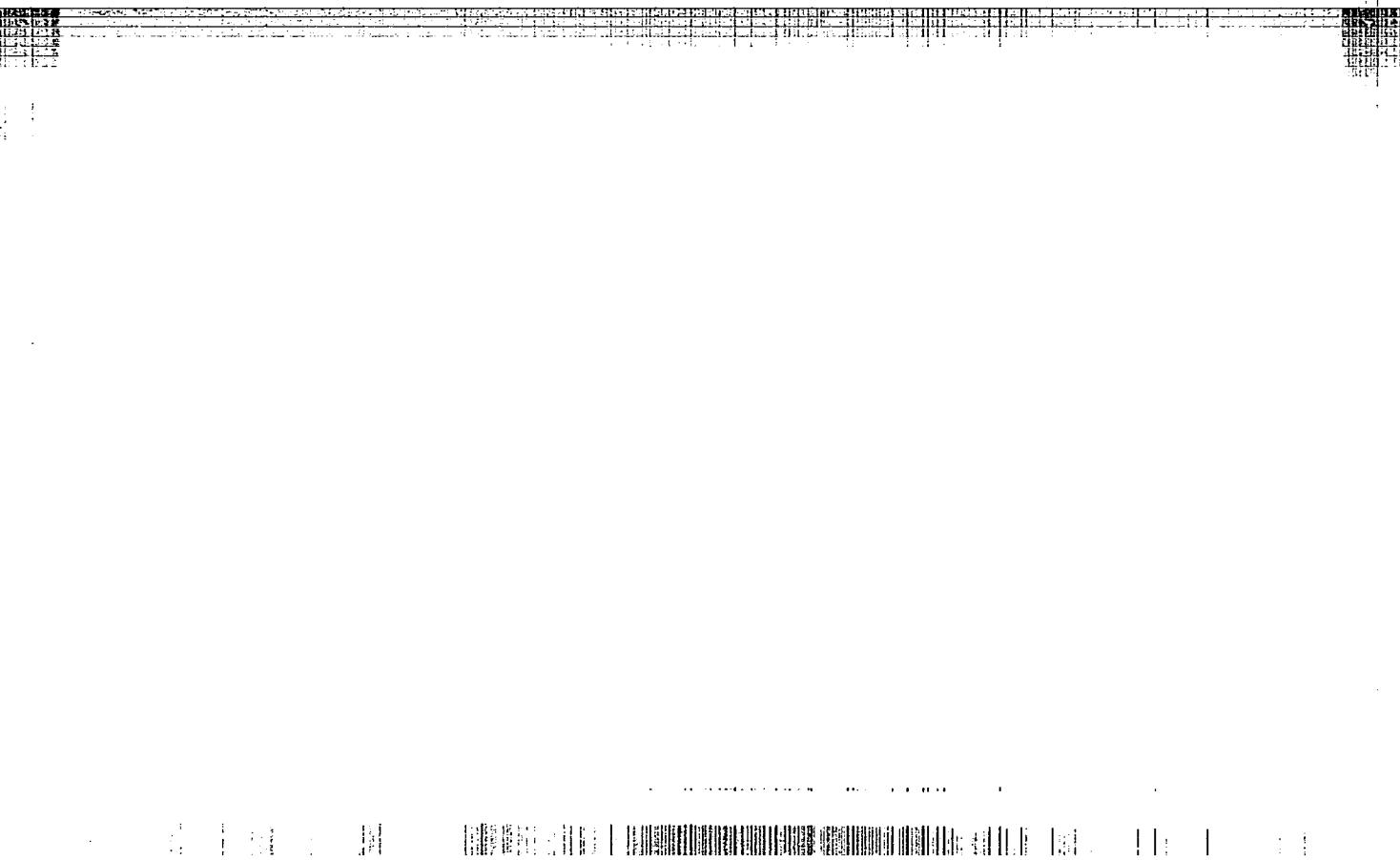
YERUGIN, A.N.

    Analytic structure of the solution to an equation (2.1).
    Dif. urav. 1 no. 12:1606-1619 D '65.   (MIRA 18:12)

    1. Matematicheskiy institut imeni Steklova, Leningradskoye
    otdeleniye. Submitted July 21, 1965.

YERUGIN, A.N.

Analytic structure of the solution of a (2.5) equation. Dif.
urav. 1 no.7:896-902 Jl '65.

(MIRA 18:8)

1. Leningradskoye otdeleniye Instituta matematiki imeni
V.A. Steklova.

L 43135-66   EWT(d)   LJP(c)

ACC NR: AP6014169   SOURCE CODE: UR/0376/65/001/012/1606/1619

AUTHOR: Yerugin, A. N.

ORG: Leningrad Section, Mathematical Institute im. V. A. Steklov (Leningradskoye otdeleniye, Matematicheskiy institut)

TITLE: The analytic structure of the solution of Equation (2.1)

29
B

SOURCE: Differentsial'nyye uravneniya, v. 1, no. 12, 1965, 1606-1619

TOPIC TAGS: differential equation solution, mathematic analysis, FUNCTION, CONVERGENT SERIES

ABSTRACT: The author investigates the analytic structure of the solution to the equation of integral curves of a system of two differential equations with nonholomorphic right-hand sides which in the case of the focus has the form

$$\gamma_2 = \sum_{i=1}^{\infty} a_i \gamma_1^i.$$

where Q_n and $\bar{Q}_n$ belong to specially defined K and T functions, $Q_n = g_n + \bar{Q}_n$; g, α are constants; and the series $Q(z, \theta)$ is absolutely and uniformly convergent for $\text{sign}(-g)\theta \geq \theta_0$, and $z \leq z_0, \tau$ const. The paper presents the preliminary investigation of the equation, and

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L 43135-66

ACC NR: AP6014169

then discusses five particular cases. The basic properties of the asymptotic solutions of Eq. (2.1) will be given in a separate paper. Orig. art. has: 43 formulas.

SUB CODE: 12/ SUBM DATE: 21Jul65/ ORIG REF: 007

Card 2/2 af

YERUGIN, A.N.

Estimations. Inzh.-fiz. zhur. no.11:109-111 N '64.

(MIRA 18:2)

1. Matematicheskiy institut imeni V.A. Steklova, Leningrad.

YERUGIN, N. P.

N   "Sur la Substituttion Exposante Pour Quelques Systemes Irreguliers,"
Matem. Sb. (Mathematical collection) 1935, 42:6, pp. 745-753.

ERUGIN, N. P.

Pokazatel'naya Podstanovka irregulyarnoy sistemy lineynykh differentsial'nykh uraveniy.
Dan, 17 (1937), 235-236. O funktsional'no-invariatnykh resheniyakh. Dan, 42 (1944),
385-386. Privodimyye sistemy. Trudy matem. in-ta im. Steklova, 13 (1946)

SO: Mathematics in the USSR, 1917-1947
        edited by Kurosh, A.G.,
        Markushevich, A.I.,
        Rashevskiy, P.K.
        Moscow-Leningrad, 1948

YERUGIN, N. P.

"On Exponential Substitution in the System of Linear Differential Equations,
Poincare's Problem," Matem. Sb. (Mathematical Collection) 1938, 3 (45) pp. 509-526.

YERUGIN, N.P.

"On Riman's /Riemann/ Problem for the System of Gauss," Uchen. zap. Leningr. ped. in-ta (Scientific Transactions of the Leningrad Pedagogical Institute), 1939, 28, pp. 293-304.

YERUGIN, N. P.

"Note to the Article of L. M. Shifner," Izv. AN. ser. matem. (News of the A
Academy of Sciences, Mathematical Series) 1941, 5, pp. 377-380.

YERUGIN, N. P.

"On Functional-Invariant Solutions," DAN, 1944, 49:9 pp. 385-386.

YERUGIN, N. P.

"Reduced Systems," Nauchnyy byull. LGU (Scientific Bulletin of the Leningrad State Universityt) 1945, 2, p. 5-6.
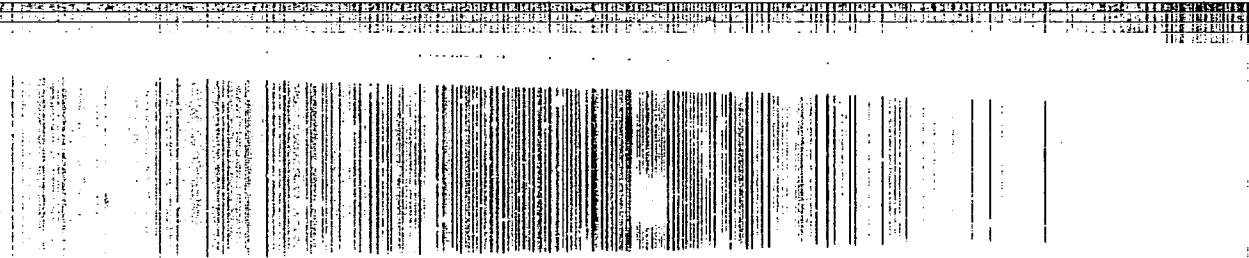
YERUGIN, N.P.

Functional and invariant solutions. Uch. zap. LGU no.96:101-134 '48.
(Differential equations, Partial)   (MLRA 10:8)

YERUGIH, N.P.

Functional invariant solutions of equations of the second order
with two independent variables. Uch. zap. LGU no.111:142-166 '49.
(Differential equations, Partial)   (MLRA 10:8)

YERUGIN, N. P.   158T57

USSR/Mathematics - Boundary-Value   Mar/Apr 50
                        Problem

"Closed Solution of the Parabolic-Boundary Nonho-
mogeneous Problem," N. P. Yerugin, Leningrad, 3 pp

"Priklad Matemat i Mekh" Vol XIV, No 2

Considers partial differential equation $u_t = u_{yy}$
with the boundary conditions:
       u = constant   for $y = 0$, $t > 0$
       $u = 0$ for $y = L$, $t > 0$
       $u = 0$ for $0 < y < L$, $t = 0$

General solution by usual methods cannot be used
with given conditions, but another form of general
solution is found to be more adaptable. Submitted
17 Jan 50.

                                              158T57

YERUGIN, N. P.
"

"Close Solution of a Parabolic Contiguous Heterogeneous Problem," PMM , 1950,
14:2 , pp. 215-217.

YERUGIN, N. P.

168T50

USSR/Mathematics - Stability   Sep/Oct 50
Nonlinear Mechanics
Servos

"Stability of Motion, and the Qualitative Theory
of Differential Equations as a Whole," N. P.
Yerugin, Leningrad

"Priklad Matemat i Mekh" Vol XIV, No 5, pp 459-
512

Solves problem in M. A. Ayzerman's "Stability
in the Large of Dynamic Systems" (Uspekh Mate-
mat Nauk" Vol IV, No 4, 1949), namely, "Dem-
onstrate or refute the following assertion:
There exists at the origin stable equilibrium

USSR/Mathematics - Stability   Sep/Oct 50
(Contd)

- 168T50

and its region of attraction encompasses all
phase spaces of linear differential equations"
Work is in two parts: behavior of integral curves
and Ayzerman's problem. Submitted 23 May 50.

168T50

YERUGIN, N. P.

PHASE X   TREASURE ISLAND BIBLIOGRAPHICAL REPORT   AID 669 - X

BOOK
  Author: YERUGIN, N. P.   Call No.: AF648837
  Full Title: ON A PROBLEM OF THE THEORY OF STABILITY OF SYSTEMS OF
              AUTOMATIC CONTROL (Photostat copy)
  Transliterated Title: Ob odnoy zadache teorii ustoychivosti sistem
                        avtomaticheskogo regulirovaniya
PUBLISHING DATA
  Originating Agency: Academy of Sciences, Mechanics Institute, U.S.S.R.
    "Prikladnaya Matematika i Mekhanika", 1952, Tom XVI, 620-628
    (Applied Mathematics and Mechanics)
  Publishing House: Not given
  Date: 1952   No. pp.: 9   No. of copies: Not given
  Editorial Staff: Not given
PURPOSE AND EVALUATION: A critical review of the application by I. G.
  Malkin (see: Applied Mathematics and Mechanics, 1952, issue 3) of
  the method of Lyapunov's function to prove the stability of equili-
  brium, made by the author at the request of the editors of this
  periodical.
TEXT DATA
  Coverage: The author states I. G. Malkin analysed the following problem:

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Ob odnoy zadache teorii ustoychivosti
sistem avtomaticheskogo regulirovaniya

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given a system of two differential equations

$$\frac{dx}{dt} = f(x) + ay, \qquad \frac{dy}{dt} = bx + cy \qquad (1)$$

where a, b and c are constants, and f(x) is under the conditions that

$$x\,[f(x) + cx] < 0 \qquad f(0) = 0 \qquad (2)$$
$$x\,[cf(x) - abx] > 0 \qquad (x \neq 0) \qquad (3)$$

Malkin assumed (as did M. A. Ayzerman, who offered this problem in "Uspekhi matematicheskikh nauk", 1949, v. IV, issue 4) that system (1) satisfies the condition of the theorem of uniqueness for all the values of x, y. It remained to be proved that the state of equili-brium x = 0, y = 0 of system (1) is asymptotically stable for any original perturbation. Further, Malkin constructed an integral equation (4) to prove his assumption and finally obtained

$$\frac{dV}{dt} = [f(x) + cx]\;[cf(x) - abx] \leqslant 0$$

and concluded that the stability will be asymptotic even though V is not a function of definite but of permanent sign.
The author develops Malkin's brief reasoning because it proves only V(t) decreases when $t \rightarrow \infty$, and also because the curves V = const.

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Ob odnoy zadache teorii ustoychivosti
sistem avtomaticheskogo regulirovaniya

may be open curves. The author introduces Bendixon's theorem for this purpose. He also proves the fact of asymptotic stability by making the assumption that the function $f(x)$ is continuous. In analysing the decreasing function $V(t)$, he assumes that

$$V(t) \rightarrow k_1^2 \neq 0, \text{ at } t \rightarrow \infty$$

and states that a value t_1 can be found, when $V(t_1)$ will have a pre-determined value and be reduced to any small domain k_1^2. Let

$$V(t_1) = k_1^2 + \beta, \text{ where } \beta > 0 \text{ is arbitrarily small.}$$

A is a domain bounded by closed curves:

$$V = k_1^2, \text{ and } V = k_1^2 + \beta$$

A_ε is part of the circle corresponding to

$-\varepsilon < x < \varepsilon$, and $A - A_2$ the remaining part of the circle. Then he demonstrates that any motion $M(t)$ in a finite moment $t_2 > t_1$ attains the curve, after which it either enters inside the domain bounded by this curve or spirally encircles this curve, because $V(t)$ is decreasing. In further discussion he introduces integral equations and integral curves and refers to his work on "Stability of Motion

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Ob odnoy zadache teorii ustoychivosti
sistem avtomaticheskogo regulirovaniya

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and the Qualitative Theory of Differential Equations" (Prikladnaya matematika i mekhanika, 1950, v. XIV, issue 5). He uses two theorems from this work, 10.1 and 28.1; the first in full, but only the reasoning employed in the second, which has been called incorrect, by N. N. Krasovskiy (Ibid., 1952, v. XVI, issue 5). The author concludes that the domain of asymptotic stability includes the entire plane even when $D < \infty$.

Malkin, according to the author, analysed also the system of differential equations:

$$\frac{dx}{dt} = ax + f(y), \qquad \frac{dy}{dt} = bx + cy,$$

when $a + c < 0$, $y[acy - bf(y)] > 0$ and a function was deduced

$$2V = 2\int_0^y (acy - bf(y)dy) + (bx - ay)^2 \text{ for which we have}$$

$$\frac{dV}{dt} = (a + c)(acy - bf(y)y < 0$$

The author suggests the incorporation of his reasoning as given above and his theorem (1) mentioned in his work "Theorems of Instability" (Ibid., 1952, v. XVI, issue 3).

Concluding, the author says that Lyapunov's method, analyzed in this article, does not allow presenting the whole multiform qualitative

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Ob odnoy zadache teorii ustoychivosti
sistem avtomaticheskogo regulirovaniya   AID 669 - X

picture of the discussed system of differential equations and defining
the role of parameters of this system, when the process is quickly
damping. For this reason, in the case of the existence of isolated
domains close to the origin of coordinates, the fact cannot be estab-
lished that the entire mass of solutions, when $f(x)$ is a holomorphic
function, would be reached by non-holomorphic Poincaré series, and
that the boundary of these zones would correspond to a single holo-
morphic solution at the point (0.0) of the solution of equation

$$\frac{dy}{dx} = \frac{bx + cy}{f(x) + ay}$$

(in the case when $f(x)$ is not holomorphic, the analytic character of
the solution representing the boundaries of these isolated sectors,
is not clear).

Table of Contents: None
No. of References: 8, all Russian (1941-1952).
Facilities: None given.

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